Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A method for logging data written by a host computer to a local data storage system at a first site including a local array of data storage devices, comprising: [[and]]

providing a first array controller and a second array controller coupled to each other and also coupled between the host computer and the array; ~~array, wherein the data is replicated on a remote storage system connected to the local data storage system by at least one link, the method comprising:~~

storing, on a log unit in primary cache memory in the first array controller, the data and associated command for every write transaction that occurs between the host computer and the local array; ~~array, wherein~~

mirroring the primary cache ~~is mirrored~~ in backup cache memory in the second array controller at the first site;

sending the data to [[the]] a remote storage system located at a second site and linked by at least one link to the local data storage system to create a remote copy; and

in the situation wherein the remote copy has not successfully completed and the first array controller has failed, re-playing the data on the log unit by performing:

for each entry in the log unit mirrored in the backup cache in the second array controller:

reading the data from the backup cache for each said transaction in the log unit; and

writing the data to the remote storage system in transaction order.

Claim 2 (previously presented): The method of claim 1, further comprising sending the host computer a write completion status message prior to sending the data to the remote storage system.

Claim 3 (previously presented): The method of claim 1, wherein writing the data includes performing a transaction-order merging of the data on the log unit with the data previously stored on the remote storage system to return the data on the local data storage system and the remote storage system to a consistent data state.

Claim 4 (previously presented): The method of claim 3, further comprising:

continuing to write said data from the host computer to the log unit while said merging is being performed.

Claim 5 (previously presented): The method of claim 1, wherein said log unit comprises a storage set considered as a logical unit by the array controller.

Claim 6 (previously presented): The method of claim 1, wherein the data written by the host computer is stored in cache memory in the first array controller in transaction order.

Claim 7 (original): The method of claim 1, wherein the second array controller communicates with the first controller to determine when the first array controller fails.

Claim 8 (original): The method of claim 1, wherein the data written by the host computer is written in asynchronous mode.

Claim 9 (original): The method of claim 1, wherein the remote storage system is unavailable due to a situation wherein either said at least one link has failed, the remote site is down, or a site failover has occurred.

Claim 10 (currently amended): A method for merging data, written by a host computer to a local data storage array with a backup copy of the data written to a remote storage system, after a first array controller for the local storage system has been inaccessible for a period of time, wherein both the first array controller and a second array controller are coupled to each other and to the local data storage array, the method comprising:

storing the data for each write transaction from the host computer in mirrored cache memory in both the first array controller and the second array controller, the first and second array controllers being located at a site remote to a site of the remote storage system;

storing command information including the LBN extent associated with the data in a log in mirrored cache memory in both the first array controller and the second array controller;

sending a write completion status to the host;

sending the data to the remote storage system;

wherein, if the first controller fails before the data, for which said completion status was sent to the host, is successfully copied to the remote storage system,

merging the data, stored on said log, with the backup copy in the remote storage system, in response to commands issued by the second array controller, by using the command information stored in the log to write the data associated therewith to the remote data storage system in the order in which each said write transaction originally occurred.

Claim 11 (previously presented): The method of claim 10, wherein, in the situation wherein both controllers fail before the data, for which said completion status was sent to the host, is successfully copied to the remote storage system, after the first array controller again becomes operational,

merging the data, stored on said log, with the backup copy in the remote storage system, in response to commands issued by the first array

controller, by using the command information stored in the log to write the data associated therewith to the remote data storage system in the order in which each said write transaction originally occurred.

Claim 12 (original): The method of claim 10, wherein the second controller communicates with the first controller to determine when the first controller fails.

Claim 13 (original): The method of claim 10, wherein the data written by the host computer is written in asynchronous mode.

Claim 14 (original): The method of claim 10, wherein the data for each write transaction from the host computer is stored in cache memory in the first array controller in transaction order.